PASTEURIA PENETRANS, A POTENTIAL BIOLOGICAL CONTROL AGENT FOR ROOT-KNOT NEMATODE MANAGEMENT IN VEGETABLE PRODUCTION.

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Pasteuria penetrans is an endospore forming bacterial parasite of plant-parasitic nematodes. The bacterium shows great promise as a biological control agent of root-knot nematodes. Isolates of *P. penetrans* specific to the common root-knot nematodes, *Meloidogyne arenaria*, *M. incognita*, and *M. javanica* have been identified in Florida. The bacterium survives wetting and drying of soil and has been recovered from second-stage juveniles (J2) of *Meloidogyne* spp. up to 1.2 m deep in soil. The endospores appear to move down into the soil profile with percolating water. The bacterium can survive and infect *Meloidogyne* spp. in different soil types in Florida. Aldicarb, fenamiphos, and 1,3-D inhibited endospore attachment on J2, but the effect may be related to immobility of the J2 caused by the nematicides, rather than direct effects of the nematicides on endospore attachment. Several root-knot nematode infested field sites have been identified with very high densities of *P. penetrans*. In each case the nematode population density is suppressed by the bacterium. *Meloidogyne arenaria* population densities on peanut grown in microplots in which *P. penetrans* was added were suppressed by the antagonists after 3 years. During the 4th, 5th, and 6th year, the root-knot nematode galling on peanut pods, pegs, and roots was reduced to undetectable levels in the microplots. The density of endospores in each *P. penetrans* infested microplot was estimated at 4-5 $\times$ 10^6/g soil.